IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

JAN VAN DER MEER ET AL.

Atty. Docket

2003P02863WOUS

(US030480US3)

Serial No.: 10/596,167

Filed: June 2, 2006

Group Art Unit: 2482

Examiner: G.S. Philippe

Confirmation No.: 3102

SYSTEM AND METHOD FOR IMPROVED SCALABILITY SUPPORT IN MPEG-2 SYSTEMS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF

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(i) Real Party in Interest

The real party in interest in this application is KONINKLIJKE PHILIPS ELECTRONICS N.V. by virtue of an assignment from the inventors recorded on June 2, 2006, at Reel 17710, Frame 0516.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of Claims

Claims 1, 2, 5, 7 and 9-25 stand finally rejected by the Examiner; claims 3, 4, 6 and 8, have been cancelled. Appellants hereby appeal the final rejection of claims 1, 2, 5, 7 and 9-25.

(iv) Status of Amendments

There was one Response filed on May 26, 2011, after final rejection of the claims on March 31, 2011, this Response having been considered by the Examiner.

(v) Summary Of Claimed Subject Matter

The subject invention, as claimed in claim 1, includes:

"A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder ***(Fig. 2: 220; specification page 6, line 22 to page 7, line 10)***; and

transmitting the signaling information along with the at least two layers (BS, ES) in a transport stream to the decoder ***(Fig. 2: 202, 204, 208, BS 212, 214, 206, 209, 216, 220, 240, 250; specification page 5, line 15 to page 6, line 20, page 7, lines 12-14 and 30-31, and page 7, line 32 to page 8, line 1)***,

wherein said signaling information is constructed as a plurality of parameter lists ***(Figs. 4-6; specification page 11, lines 13-25)***,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream ***(specification page 11, lines 18-25)***."

As claimed in claim 5, the subject invention includes:

"A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder ***(Fig. 2: 220; specification page 6, line 22 to page 7, line 10)***; and

transmitting the signaling information along with the at least two layers (BS, ES) in a transport stream to the decoder ***(Fig. 2: 202, 204, 208, BS 212, 214, 206, 209, 216, 220, 240, 250; specification page 5, line 15 to page 6, line 20, page 7, lines 12-14 and 30-31, and page 7, line 32 to page 8, line 1)***,

wherein said signaling information is constructed as a parameter list ***(specification page 6, lines 22-23)***,

wherein said parameter list is comprised of a plurality of parameter values ***(specification page 6, lines 26-28)***,

and wherein one of said parameter values defines, for a corresponding layer, a DC compensation ***(specification page 12, lines 20-24)***."

As claimed in claim 7, the subject invention includes:

"The method as claimed in Claim 5, wherein said parameter values define signaling information for each of said at least two layers (BS, ES)***(specification page 11, lines 13-16)***."

As claimed in claim 9, the subject invention includes:

"The method as claimed in Claim 5, wherein at least two of said parameter values define, for a corresponding layer, horizontal FIR coefficients for to a filtering operation required to combine the corresponding layer with a reference layer ***(Fig. 4; specification page 13, lines 15-17)***."

As claimed in claim 10, the subject invention includes:

"The method as claimed in Claim 5, wherein at least two of said parameter values define, for a corresponding layer, vertical FIR coefficients for a filtering operation required to combine the corresponding layer with a reference layer ***(Fig. 4; specification page 13, lines 15-17)***."

As claimed in claim 11, the subject invention includes:

"The method as claimed in Claim 5, wherein one of said parameter values defines, for a corresponding layer, a video stream encoding type ***(specification page 7, line 2)***."

As claimed in claim 12, the subject invention includes:

"The method as claimed in Claim 5, wherein a ratio of two of said parameter values defines, for a corresponding layer, a horizontal scaling factor ***(specification page 12, lines 23-31)***."

As claimed in claim 13, the subject invention includes:

"The method as claimed in Claim 5, wherein a ratio of two of said parameter values defines, for a corresponding layer, a vertical scaling factor ***(specification page 12, lines 23-26 and page 13, lines 1-6)***."

As claimed in claim 14, the subject invention includes:

"The method as claimed in Claim 5, wherein one of said parameters defines an identifier of the reference layer to be combined with a current layer ***(specification page 7, line 7)***."

As claimed in claim 15, the subject invention includes:

"The method as claimed in Claim 5, wherein one of said parameters determines how the current layer is combined with the reference layer ***(specification page 7, line 8)***."

As claimed in claim 16, the subject invention includes:

"The method as claimed in Claim 15, wherein the current layer is combined with the reference layer in one of a parallel and sequential manner ***(specification page 14, line 7)***."

As claimed in claim 17, the subject invention includes:

"The method as claimed in Claim 5, wherein one of said parameters defines whether a corresponding layer contains one of an interlaced or progressive video stream ***(specification page 7, lines 9-10)***."

The subject invention, as claimed in claim 19, further includes:

"A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder ***(Fig. 2: 220; specification page 6, line 22 to page 7, line 10)***; and

transmitting the signaling information along with the at least two layers (BS, ES) in a program stream to the decoder ***(Fig. 2: 202, 204, 208, BS 212, 214, 206, 209, 216, 220, 240, 250; specification page 5, line 15 to page 6, line 20, page 7, lines 12-14 and page 7, line 30 to page 8, line 2)***,

wherein said signaling information is constructed as a plurality of parameter lists ***(Figs. 4-6; specification page 11, lines 13-25)***,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream ***(specification page 11, lines 18-25)***."

The subject invention, as claimed in claim 21, further includes:

"A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder ***(Fig. 2: 220; specification page 6, line 22 to page 7, line 10)***; and

transmitting the at least two layers (BS, ES) over at least one of an MPEG-2 transport stream, an MPEG-2 program stream and an Internet Protocol (IP) stream to the decoder ***(Fig. 2: 202, 204, 208, BS, 212, 214, 206, 209, 216, 240, 250; specification page 5, line 15 to page 6, line 20, and page 7, lines 30-32)***; and

transmitting the signaling information over at least one of an MPEG-2 transport stream, an MPEG-2 program stream and an Internet Protocol (IP) stream to the decoder ***(specification page 7, line 32 to page 8, line 2)***,

wherein said signaling information is constructed as a plurality of parameter lists ***(Figs. 4-6; specification page 11, lines 13-25)***,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream ***(specification page 11, lines 18-25)***."

The subject invention, as claimed in claim 22, further includes:

"A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder ***(Fig. 2: 220; specification page 6, line 22 to page 7, line 10)***;

transmitting the at least two layers (BS, ES) over Internet Protocol using real-time transport protocol (RTP) in a transmission session for each layer ***(specification page 7, lines 23-26)***; and

transmitting the signaling information within the context of said transmission session ***(specification page 7, lines 26-29)***,

wherein said signaling information is constructed as a plurality of parameter lists ***(Figs. 4-6; specification page 11, lines 13-25)***,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream ***(specification page 11, lines 18-25)***."

(vi) Grounds of Rejection to be Reviewed on Appeal

A. Whether the invention, as claimed in claims 1, 2, 5, 7, 11, 14-16 and 18-20, is unpatentable, under 35 U.S.C. 103(a), over U.S. Patent 6,731,811 to Rose in view of U.S. Patent 6,154,776 to Martin.

B. Whether the invention, as claimed in claims 9, 10, 12 and 13, is unpatentable, under 35 U.S.C. 103(a), over Rose in view of Martin, and further in view of U.S. Patent 5,742,343 to Haskell et al.

C. Whether the invention, as claimed in claims 17 and 21-25, is unpatentable, under 35 U.S.C. 103(a), over Rose in view of Martin, and further in view of U.S. Patent 7,274,661 to Harrell et al.

(vii) Arguments

35 U.S.C. 103(a) states:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

(A) Are Claims 1, 2, 5, 7, 11, 14-16 And 18-20 Unpatentable Over Rose In View Of Martin?

The Rose patent discloses a scalable predictive coding method and apparatus.

The Martin patent discloses quality of service allocation on a network.

(1) Claims 1, 2, 18-20

Claim 1 includes the limitations "wherein said signaling information is constructed as a plurality of parameter lists" and "wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream."

The Examiner indicates "It is noted that although Rose provides a signaling information constructed as a plurality of parameter lists (See Rose col. 5, lines 17-44), it is silent about defining, from the plurality of parameter, a unique quality of service of the transport."

First, Appellants would like to point out that Rose does not disclose "a signaling information constructed as a plurality of parameter lists". In particular, Rose, at col. 5, lines 17-44, states:

> "In the enhancement layer encoder 100 of the present invention, an enhancement layer estimator (ELE) 102 computes a new predicted frame

> 104, xe(n), by combining information from the reconstruction frame 106 at the base layer, xb(n) and from the previous reconstructed frame 108 at the enhancement layer xe(n-1). Note that first order prediction is described for notational simplicity but several previous frames may be used. The combining rule depends on any or all of, but not limited to, the following parameters: the compression parameters 110 of the base layer (such as quantization step and threshold, and the quantized baselayer residual 112, [ben), (see FIG. 3)), and the statistical parameters 114 of the time evolution of the frames (such as inter-frame correlation coefficients and variance). The statistical parameters may be either estimated off-line from training data, or estimated on-line by an adaptive estimator which tracks variation in the signal statistics based on either the original signal (in which case the parameters need to be transmitted to the decoder) or based on reconstructed signals which are available to the receiver. The exact definition of the combination rule depends on the level of complexity allowed for the module. At the high end, one may compute a possibly complex, optimal predicted frame given all the available information. The enhancement layer residual 116, rin), which is the difference between the input frame 118, x(n), and the predicted frame 104, xe(n), is then compressed by a compressor 120 to produce the enhancement bits 122."

Appellants submit that it should be clear from the above that Rose is only contemplating the compression parameters 110 and the statistical parameters 114, in which the statistical parameters 114 may be either estimated off-line, or estimated on-line. Hence, the only parameters being included in the transport stream are the compression parameters. However, there is no disclosure or suggestion in Rose "wherein said signaling information is constructed as a plurality of parameter lists" and "wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream."

The Examiner now indicates that Martin discloses "a method for providing video support wherein each of the plurality of parameter lists define a unique quality of service of the transport stream (See Martin col. 4, lines 52-60, col. 7, lines 20-28 and lines 47-54)."

Appellants submit that the Examiner is mistaken. In particular, while Martin relates to Quality of Service (QoS), this information is not transmitted in a transport stream with at least two layers. Rather, the QoS for a particular user is allocated by a QoS server 20 separate from any transport stream containing at least two layers being received by the user, wherein the QoS mechanism interface 43 (which may be a part of the QoS server) samples packets relating to the information flow and extracts selected parameters representative of the flow. Hence, Appellants submit that Martin neither discloses nor suggests "wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream."

Appellants therefore believe that claim 1 is patentable over Rose and Martin. Further, since claim 19 contains similar limitations, claim 19 should also be patentable over Rose and Martin. In addition, claims 2 and 18 depend from claim 1, while claim 20 depends from claim 19, and further limit claims 1 and 19, respectively. As such, claims 2, 18 and 20 should also be patentable over Rose and Martin.

(2) Claims 5, 7, 11, 14-16

The above arguments concerning Rose and Martin are incorporated herein.

The Examiner states "As per claims 5, 7, most of the limitations of these claims have been noted in the above rejection of claim 1. In addition, Rose further discloses constructing signaling information as a plurality of parameter lists (See col. 5, lines 25-37)."

Appellants would like to point out that claim 5 includes the limitations "wherein said signaling information is constructed as a parameter list", "wherein said parameter list is

comprised of a plurality of parameter values" and "wherein one of said parameter values defines, for a corresponding layer, a DC compensation."

As indicated above, the noted section of Rose merely states that use of compression parameters and statistical parameters, and that the statistical parameters are estimated. Hence, the only parameters that are transmitted in the transport stream of Rose are the compression parameters.

Appellants therefore submit that it should be apparent from the above that Rose makes no mention of DC compensation either in the above section, or anywhere else.

As such, Appellants believe that claim 5 is patentable over Rose and Martin. Appellants further submit that since claims 7, 11 and 14-16 depend from and further limit claim 5, these claims should also be patentable over Rose and Martin.

(B) Are Claims 9, 10, 12 and 13 Unpatentable Over Rose In View Of Martin, And Further In View Of Haskell et al.?

The above arguments concerning Rose and Martin are incorporated herein.

The Haskell et al. patent discloses a scalable encoding and decoding of high-resolution progressive video.

The Examiner has indicated that "Rose is silent about defining horizontal and vertical FIR coefficients for a filtering operation as specified" and that "Haskell provides a method for providing heterogeneous layered video including defining horizontal and vertical FIR coefficients for a filtering operation (See Haskell col. 5, lines 1-7, col. 7, lines 63-67, col. 8, lines 1-1 1).

With regard to claims 9 and 10, Appellants submit that the Examiner is mistaken. In particular, while Haskell et al. discloses the use of a finite-impulse-response (FIR) temporal filter, Haskell et al. is silent with regard to any coefficients needed for such a filter, and that such coefficients should be included in signal information sent with the at least two layer signals. Further, Haskell et al. does not supply that which is missing from Rose and Martin as noted above.

With regard to claims 12 and 13, Appellants would like to note that these claims are related to horizontal and vertical scaling factors and not to FIR filters. As such, Appellants believe that the Examiner's rejection thereof based on Rose/Martin/Haskell et al. is erroneous.

(C) Are Claims 17 And 21-25 Unpatentable Over Rose In View Of Martin, And Further In View Of Harrell et al.?

The above arguments concerning Rose and Martin are incorporated herein.

The Harrell et al. patent discloses a flow control method for quality streaming of audio/video/media over packet networks.

(1) Claim 17

The Examiner has conceded that "the combination of Rose and Martin is silent about providing heterogeneous layered video wherein one of the parameters defines whether a corresponding layer contains one of an interlaced or progressive stream", and then adds "Harrell provides a method for providing layered video support wherein one of the parameters defines whether a corresponding layer contains one of an interlaced or progressive stream (See Harrell col. 5, lines 1-7 and col. 6, lines 2-16)."

Appellants believe that the Examiner is mistaken. In particular, Harrell et al., at col. 5, lines 1-7, states:

> "constraint, in contrast, simply increasing the bandwidth devoted to the client's media stream would allow for packet replacement and error avoidance. A typical last-mile link over an ADSL connection might allow 1.5 Mbps of total data, 0.4 Mbps of which might be devoted to overhead information and a data channel, leaving 1.1 Mbps for raw video and audio content.";

and at col. 6, lines 2-16, states:

> "A buffering portion and a signaling device operatively coupled to the buffering portion that can send signals to the server 202 together comprise the client media buffer 210. The buffer is large enough to allow recovery from infrequent packet loss through at least one congestion detection mechanism. In response to at least one detected congestion level, the buffer may implement at least one error avoidance mechanism. For instance, the buffer duration is long enough to allow packet retransmission before the lost packet obstructs the client's media streaming experience. The buffer may also be able to detect heavier congestion situations with enough lead time to allow a switch to a lower bit rate video stream. This switch prevents any hesitation or interruption in the frame sequence but may cause an acceptable degradation in video quality during a lower-bit-rate streaming period."

It should be apparent from the above that Harrell et al. does not distinguish between interlaced or progressive video streams, and whether the signal information should include such a definition. In fact, Harrell et al. does not even mention the term "interlaced", and only mentions the term "progressive" at col. 15, line 7 as in "Progressive Fine Granularity Scalable (PFGS) coding". Hence, Appellants submit that the combination of Rose, Martin and Harrell et al. does not render claim 17 obvious.

(2) Claims 21-25

Claims 21-25 relate to the transmission of the two layers and the signaling information over Internet protocol, where the signaling information is transmitted either in-band or out-of-band.

The Examiner has indicated that "Harrell provides a method for providing layered video support including transmitting the layers (BS ES) over Internet Protocol using real-time transport protocol while the transmission session is performed either in-band of out-of-band (See Harrell col. 4, lines 23-37)."

Appellants submit that the Examiner is mistaken. In particular, at col. 4, lines 23-37, Harrell et al. states:

> "One embodiment provides a solution to the problem of providing uninterrupted streaming media over IP networks, such as telecommunications access networks, that do not otherwise guarantee Quality of Service (QoS). In particular, it provides for error avoidance despite limited recovery headroom in the last-mile link. For example, the invention might be applied to provide quality streaming of 1.1 Mbps of audio/video along with data and overhead over a 1.5 Mbps ADSL link. In another example, the invention might be applied to deliver two 1.25 Mbps audio/video streams along with overhead and data over a single 3 Mbps link to a client.
>
> "The invention is especially useful when streaming media traffic, such as for instance streaming video, consumes a significant proportion of the bandwidth of the access network."

While Harrell et al. arguably discloses transmission of video information over Internet protocol, as should be apparent from the above, there is no disclosure or suggestion of the signaling information being transmitted either in-band or out-of-band. Further, Appellants submit that Harrell et al. does not supply that which is missing from Rose and Martin.

Based on the above arguments, Appellants believe that the subject invention is not rendered obvious by the prior art and is patentable thereover. Therefore, Appellants respectfully request that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by ___/Edward W. Goodman/_____
Edward W. Goodman, Reg. 28,613
Attorney

(viii) Claims Appendix

1. A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder; and

transmitting the signaling information along with the at least two layers (BS, ES) in a transport stream to the decoder,

wherein said signaling information is constructed as a plurality of parameter lists,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream.

2. The method as claimed in Claim 1, wherein said transport stream is an MPEG-2 transport stream.

5. A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder; and

transmitting the signaling information along with the at least two layers (BS, ES) in a transport stream to the decoder,

wherein said signaling information is constructed as a parameter list,

wherein said parameter list is comprised of a plurality of parameter values,

and wherein one of said parameter values defines, for a corresponding layer, a DC compensation.

7. The method as claimed in Claim 5, wherein said parameter values define signaling information for each of said at least two layers (BS, ES).

9. The method as claimed in Claim 5, wherein at least two of said parameter values define, for a corresponding layer, horizontal FIR coefficients for to a filtering operation required to combine the corresponding layer with a reference layer.

10. The method as claimed in Claim 5, wherein at least two of said parameter values define, for a corresponding layer, vertical FIR coefficients for a filtering operation required to combine the corresponding layer with a reference layer.

11. The method as claimed in Claim 5, wherein one of said parameter values defines, for a corresponding layer, a video stream encoding type.

12. The method as claimed in Claim 5, wherein a ratio of two of said parameter values defines, for a corresponding layer, a horizontal scaling factor.

13. The method as claimed in Claim 5, wherein a ratio of two of said parameter values defines, for a corresponding layer, a vertical scaling factor.

14. The method as claimed in Claim 5, wherein one of said parameters defines an identifier of the reference layer to be combined with a current layer.

15. The method as claimed in Claim 5, wherein one of said parameters determines how the current layer is combined with the reference layer.

16. The method as claimed in Claim 15, wherein the current layer is combined with the reference layer in one of a parallel and sequential manner.

17. The method as claimed in Claim 5, wherein one of said parameters defines whether a corresponding layer contains one of an interlaced or progressive video stream.

18. The method as claimed in Claim 1, wherein the signaling information is embedded by means of MPEG system descriptors.

19. A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder; and

transmitting the signaling information along with the at least two layers (BS, ES) in a program stream to the decoder ,

wherein said signaling information is constructed as a plurality of parameter lists,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream.

20. The method as claimed in Claim 19, wherein said program stream is an MPEG-2 program stream.

21. A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder; and

transmitting the at least two layers (BS, ES) over at least one of an MPEG-2 transport stream, an MPEG-2 program stream and an Internet Protocol (IP) stream to the decoder; and

transmitting the signaling information over at least one of an MPEG-2 transport stream, an MPEG-2 program stream and an Internet Protocol (IP) stream to the decoder,

wherein said signaling information is constructed as a plurality of parameter lists,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream.

22. A method for providing heterogeneous layered video support, comprising the acts of:

constructing signaling information defining how at least two layers (BS, ES) are to be combined at a decoder;

transmitting the at least two layers (BS, ES) over Internet Protocol using real-time transport protocol (RTP) in a transmission session for each layer; and

transmitting the signaling information within the context of said transmission session,

wherein said signaling information is constructed as a plurality of parameter lists,

and wherein each of said plurality of parameter lists define a unique quality of service (QOS) of said transport stream.

23. The method as claimed in Claim 22, wherein said signaling information is transmitted in-band within said session.

24. The method as claimed in Claim 22, wherein said signaling information is transmitted out-of-band within said session.

25. The method as claimed in Claim 22, wherein said signaling information is transmitted using session description protocol (SDP).

(ix) Evidence Appendix

There is no evidence which had been submitted under 37 C.F.R. 1.130, 1.131 or 1.132, or any other evidence entered by the Examiner and relied upon by Appellants in this Appeal.

(x) Related Proceedings Appendix

Since there were no proceedings identified in section (ii) herein, there are no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.